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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/767,538	01/23/2001	Yingjian Wang	17281/00002	2993

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EXAMINER

LUNDGREN, JEFFREY S

ART UNIT PAPER NUMBER

1639

DATE MAILED: 05/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/767,538	Applicant(s) WANG ET AL.	
	Examiner Jeff Lundgren	Art Unit 1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 and 49-53 is/are pending in the application.
- 4a) Of the above claim(s) 1-36, 40-42 and 50-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-39, 43-46, 49 and 53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/24/03</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Status of the Claims

Claims 1-46, and 49-53 are pending in the application; claims 1-36, 40-42 and 50-52, are withdrawn as being directed to a non-elected invention; claims 37-39, 43-46, 49 and 53 are being treated on the merits.

Rejections Overcome by Applicants' Amendments

In the claim amendments filed on February 6, 2006, Applicants have amended dependent claim 37, among others, by adding the limitations "cell growth support" and "applying one or more conditions to one or more of said reagent portions to facilitate said transfer of some or all of each specific reagent portion to said specific reagent portion's corresponding biological target."

The rejection made to the claims in the Office Action mailed May 3, 2005, under 35 U.S.C. § 102(e) as being anticipated by Sabatini US Pat. No. 6,544,790 (4/03: filed 9/99), is withdrawn in view of Applicants' amendment to the claims.

The rejection made to the claims in the Office Action mailed May 3, 2005, under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, is withdrawn in view of Applicants' amendment to the claims.

The rejection made to the claims in the Office Action mailed May 3, 2005, under 35 U.S.C. 102(a,b,e) as being anticipated by Palsson US Pat. 5,811,274 (9/98), is withdrawn in view of Applicants' amendment to the claims.

The rejection made to the claims in the Office Action mailed May 3, 2005, under 35 U.S.C. 103(a) as being unpatentable over Palsson US Pat. 5,811,274 (9/98) in view of Sabatini US Pat. No. 6,544,790 (4/03: filed 9/99), is withdrawn in view of Applicants' amendment to the claims.

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The rejection made to the claims in the Office Action mailed May 3, 2005, under 35 U.S.C. 103(a) as being unpatentable over Sabatini US Pat. No. 6,544,790 (4/03: filed 9/99) in view of Palsson US Pat. 5,811,274 (9/98) and/or Lockett et al. US Pat. No. 5,854,224 (12/98), is withdrawn in view of Applicants' amendment to the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 37-39, 43-46 and 53 are rejected under 35 U.S.C. § 102(e) as being anticipated by Moynihan *et al.*, U.S. Patent No. 6,365,349 B1, issued on April 2, 2002, having priority to July 22, 1997.

Claim 37 is directed to a method of bringing two or more reagents into contact with one or more biological targets, comprising an array of reagents contacting a group of biological targets on cell growth support, wherein the reagents locations are addressed.

Moynihan teaches an improved pipette dispenser for use in biological assays in array format. Moynihan teaches that her invention is relevant to the combinatorial arts for the testing of many samples (*i.e.*, two or more reagents):

“In the fields of molecular biology and microbiology it has long been common in the art to make replicate arrays of biological agents to facilitate parallel testing of many samples. For example, the use of sterile velvet cloths and a piston-ring apparatus has long been used to make replicate agar plates of bacterial and yeast colonies on many plates, each containing a different growth medium, as a way of rapidly screening a large number of independent colonies for different growth phenotypes (Lederberg and Lederberg, J. Bacteriol. 63:399, 1952). Likewise, 96-well microtiter plates have long been used to store, in an organized and easily accessed fashion, large numbers of cell lines and virus isolates representing recombinant DNA libraries or monoclonal antibody cell lines.”

Moynihan, col. 1, lines 20-34 (emphasis added).

Moynihan discloses a well-known apparatus in the art for dispensing the reagents to the array for delivery the two or more reagents:

“As noted above, transfer devices have been in use for some time in the fields of microbiology and molecular biology. The types of devices which have been used can be roughly divided into two categories. Pressure devices (e.g., pumps and automatic pipettes), driven by positive and/or negative pressure, which deliver fixed aliquots of liquids sample via a pipette tip to a solid surface or into a microtiter well. Pipette arrays have been constructed that correspond to the standard 96-well microtiter dish format (Reek et al., BioTechniques 19:282, 1995). These devices are most accurate in the 5 µl and above volume range, but are generally ill-suited to smaller volume tasks.”

Moynihan, col. 3, lines 1-13 (emphasis added). The pipettes comprise “barriers” as claimed by Applicants, as Applicants’ claims are open to the physical geometries of the barriers.

Claim 38 is directed to an array that comprises two or more reagents, wherein at least one reagent portion comprises two or more reagents, and claim 39 is directed to a reagent of DNA; Moynihan teaches these limitations in that the two or more reagents in one of the reagent portions (see section titled *Biomolecule Solutions*; col. 7, line 25-58; *i.e.*, water, an oligonucleotide, and a thickening agents – three reagents in one pipette). Claim 43 is directed to a substantially level surface so that the reagent portions do not commingle; see the pipette arrays as disclosed by Moynihan above, wherein each pipette prevents commingling. Claim 44 is directed to supports comprising solid supports of rigid plastic plates, and claim 45 is directed to a support that comprises a layer of one or more polymers adapted to immobilize one or more reagents; Moynihan teaches pipette arrays (*i.e.*, plastic or glass, wherein the plastic pipettes comprise at least one layer of a polymer)¹. Claim 46 is directed to seeding two or more cells;

¹ One of ordinary skill in the would at once envisage this limitation because plastic pipette tips are well-known and routine in the art of laboratory preparations. See *In re Graves*, 69 F.3d 1147, 36 USPQ2d 1697 (Fed. Cir. 1995), where prior art reference disclosing a system for testing the integrity of electrical interconnections that did not specifically disclose simultaneous monitoring of output points still anticipated claimed invention because simultaneous monitoring was within the knowledge of a skilled artisan; see also *In re Donohue*, 766 F.2d 531, 533 (Fed. Cir. 1985), where prior art anticipates a claim if it discloses the claimed invention such that a skilled artisan could take the teaching and his own knowledge to possess the claimed invention; see also *In re Best* 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). Evidence that plastic pipettes are well-known and routine in the art of

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Moynihan teaches cells in growth medium in a 96-well microtiter plate (col. 3, lines 23-47). Claim 53 is directed to separating the array from the cell growth medium; in Moynihan's pipette array (with reference to Reek *et al.*)², after the automated pipette array moves close to the cell growth medium and deposits the solution near the cell growth medium, it is then separated from the cell growth support.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

laboratory preparations is common knowledge to those of ordinary skill can be illustrated by numerous teachings, for example, the Arnot reference (see Example 7; Arnot et al., U.S. Patent No. 5,700,906, issued on December 23, 1997).

² One of ordinary skill in the art would incorporate the teachings of Reek into Moynihan, in particular the teachings as it pertains to automated pipette array, and therefore is treated as teaching these limitations. See, *Advanced Display Systems Inc. v. Kent State University*, 54 USPQ2d 1673 at 1679 (Fed. Cir. 2000) – "Incorporation by reference provides a method for integrating material from various documents into a host document --a patent or printed publication in an anticipation determination by citing such material in a manner that makes clear that the material is effectively part of the host document as if it were explicitly contained therein. See *General Elec. Co. v. Brenner*, 407 F.2d 1258, 1261-62, 159 USPQ 335, 337 (D.C. Cir. 1968); *In re Lund*, 376 F.2d 982, 989, 153 USPQ 625, 631 (CCPA 1967).

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Claims 37-39, 43-46, 49 and 53, are rejected under 35 U.S.C. 103(a)³ as being unpatentable over Balch, U.S. Patent No. 6,083,763, issued on July 4, 2000, in view of Moynihan *et al.*, U.S. Patent No. 6,365,349 B1, issued on April 2, 2002.

The limitations of claims 37-39, 43-46 and 53 have been detailed above, and are herein incorporated by reference to the instant rejection.

Claim 49 is directed to a step of applying electric pulses to apply one or more reagents.

Balch teaches a method and apparatus for analyzing molecular structures within a sample substance using an array having a plurality of test sites upon which the sample substance is applied. The invention is also directed to a method and apparatus for constructing molecular arrays having a plurality of test sites. The invention allows for definitive high throughput analysis of multiple analytes in complex mixtures of sample substances. A combinatorial analysis process is described that results in the creation of an array of integrated chemical devices. These devices operate in parallel, each unit providing specific sets of data that, when taken as a whole, give a complete answer for a defined experiment. This approach is uniquely capable of rapidly providing a high density of information from limited amounts of sample in a cost-effective manner. One of the embodiments of the method/apparatus, relates to an array of dispensing units, wherein electric pulses are used to dispense reagents from array to the substrate (col. 11, lines 33-54); as in claim 49. The limitations of claims 44-46 are also met by the teachings of Balch (col. 12, lines 42-67).

Although Balch teaches the fabrication of arrays of biological materials and assays using an automated array dispensing device, Balch does not explicitly teach the application of assays with his array to substrates have cell growth medium as in claim 37.

Moynihan teaches an improved pipette dispenser for use in biological assays in array format. Moynihan teaches that her invention is relevant to the combinatorial arts for the testing of many samples (*i.e.*, two or more reagents):

³ This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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“In the fields of molecular biology and microbiology it has long been common in the art to make replicate arrays of biological agents to facilitate parallel testing of many samples. For example, the use of sterile velvet cloths and a piston-ring apparatus has long been used to make replicate agar plates of bacterial and yeast colonies on many plates, each containing a different ***growth medium***, as a way of rapidly screening a large number of independent colonies for different growth phenotypes (Lederberg and Lederberg, J. Bacteriol. 63:399, 1952). ***Likewise, 96-well microtiter plates have long been used to store, in an organized and easily accessed fashion, large numbers of cell lines and virus isolates representing recombinant DNA libraries or monoclonal antibody cell lines.***”

Moynihan, col. 1, lines 20-34 (emphasis added).

Moynihan discloses a well-known apparatus in the art for dispensing the reagents to the array for delivery the two or more reagents:

“As noted above, transfer devices have been in use for some time in the fields of microbiology and molecular biology. The types of devices which have been used can be roughly divided into two categories. Pressure devices (e.g., pumps and automatic pipettes), driven by positive and/or negative pressure, which deliver fixed aliquots of liquids sample via a pipette tip to a solid surface or ***into a microtiter well.*** ***Pipette arrays*** have been constructed ***that correspond to the standard 96-well microtiter dish format*** (Reek *et al.*, BioTechniques 19:282, 1995). These devices are most accurate in the 5 μ l and above volume range, but are generally ill-suited to smaller volume tasks.”

Moynihan, col. 3, lines 1-13 (emphasis added). The pipettes comprise “barriers” as claimed by Applicants, as Applicants’ claims are open to the physical geometries of the barriers.

Claim 38 is directed to an array that comprises two or more reagents, wherein at least one reagent portion comprises two or more reagents, and claim 39 is directed to a reagent of DNA; Moynihan teaches these limitations in that the two or more reagents in one of the reagent portions (see section titled *Biomolecule Solutions*; col. 7, line 25-58; *i.e.*, water, an oligonucleotide, and a thickening agents – three reagents in one pipette). Claim 43 is directed to a substantially level surface so that the reagent portions do not commingle; see the pipette arrays as disclosed by Moynihan above. Claim 44 is directed to supports comprising solid supports of rigid plastic plates, and claim 45 is directed to a support that comprises a layer of one or more polymers adapted to immobilize one or more reagents; Moynihan teaches pipette arrays (*i.e.*,

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plastic plates or glass plates, wherein the plastic pipettes comprise at least one layer of a polymer). Claim 46 is directed to seeding two or more cells; Moynihan teaches cells in growth medium in a 96-well microtiter plate (col. 3, lines 23-47). Claim 53 is directed to separating the array from the cell growth medium; in Moynihan's pipette array (with reference to Reek *et al.*), after the automated pipette array moves close to the cell growth medium and deposits the solution near the cell growth medium, it is then separated from the cell growth support.

One of ordinary skill in the art would have had a reasonable expectation of success in arriving at the invention as claimed because each of Balch and Moynihan teach laboratory based assays *via* the use of automated, array-based fluid deposition apparatus. One of ordinary skill in the art would have been motivated to extend the application of Balch's apparatus to cell-based assays because of their importance in the art, such as drug discovery as taught by Moynihan. Accordingly, the invention as a whole was *prima facie* obvious at the time it was invented.

Conclusions

No claim is allowable.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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If Applicants should amend the claims, a complete and responsive reply will clearly identify where support can be found in the disclosure for each amendment. Applicants should point to the page and line numbers of the application corresponding to each amendment, and provide any statements that might help to identify support for the claimed invention (*e.g.*, if the amendment is not supported *in ipsius verbis*, clarification on the record may be helpful). Should Applicants present new claims, Applicants should clearly identify where support can be found in the disclosure.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Jeff Lundgren whose telephone number is 571-272-5541. The Examiner can normally be reached from 7:00 AM to 5:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Peter Paras, can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSL

**PETER PARAS, JR.
PRIMARY EXAMINER**

Pete Paras
SPE 1639